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May 17, 1996

Dr. Martha Krebs
Director
Office of Energy Research, ER-1/FORS
U. S. Department of Energy
Washington, DC 20585

Dear Martha,

I am pleased to transmit to you the report of the "High Energy Physics Advisory Panel's (HEPAP) Composite Subpanel for the Assessment of the Status of Accelerator Physics and Technology" chaired by Dr. Jay Marx. This Subpanel has been formed in response to your letter to me dated November 17, 1994, requesting that a HEPAP subpanel be convened to examine these issues and that its membership be drawn also from, or through, the other four Energy Research advisory committees. HEPAP discussed this report initially at its February 26 and 27 meeting and after extensive discussions its members unanimously endorsed all six of the Subpanel's recommendations.

The HEPAP members were impressed by the broad spectrum of interests covered by the Subpanel membership, by the great effort expended in soliciting as wide an input as possible from all concerned scientific communities, by the Subpanel's extensive deliberations, and by the thoughtfulness of its recommendations.

The HEPAP feels that the Subpanel has done an excellent job of pointing out how the progress and developments in the accelerator science have been the engine driving progress in both particle and nuclear physics. In addition, accelerator advancements have had a major unanticipated impact on a variety of other scientific fields, such as chemistry, biology, medicine, and materials science. The HEPAP strongly endorses the idea that the Office of Energy Research (OER) should continue its strong support of accelerator science.

This Subpanel, albeit a HEPAP Subpanel, drew its membership from and through all five of the Office of Energy Research Advisory Committees. Mechanisms were set up to keep the other four committees apprised of the Subpanel's deliberations and to channel the other committees' views to the

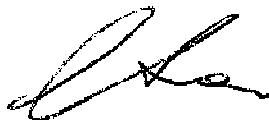
Subpanel. I would like to summarize for you briefly, the actions of the other ER advisory committees regarding this Subpanel report. The letters to me from three other Chairs regarding their committees' reactions are attached to the report. The Fusion Energy Sciences Advisory Committee has been very much preoccupied during the last several months in formulating a new long range plan for fusion science in light of the drastically curtailed funding. Accordingly, it has not had the time to review and comment about the Accelerator Subpanel report.

There is a strong consensus among all the OER advisory committees that accelerator science and technology have had a major impact on all the fields they cover. They underscored that achievements in accelerator science have contributed greatly not only to the advancement of science but to the society as a whole, as clearly documented in the report. All the committees agree that the "stewardship of accelerator science and technology should be acknowledged as an explicit part of the overall DOE Energy Research Mission."

The Nuclear Science Advisory Committee (NSAC) has joined HEPAP in fully endorsing all of the Subpanel's recommendations. The other two committees expressed some reservations about Recommendation C (Basic Energy sciences Advisory Committee, BESAC) and Recommendations B and C (Health and Environmental Research Advisory Committee, HERAC). Both BESAC and HERAC expressed concern that the Subpanel's recommendations might be interpreted as mandated "set-asides" for accelerator science research. This was not the intention of the Subpanel, and the language in the final draft has been modified somewhat to try to alleviate those fears.

All the committees applauded the thorough work that the Subpanel has done in carrying out its mission. The Report should provide for you a comprehensive documentation of the past achievements of accelerator science and give useful guidance to the OER as it formulates its plans for future stewardship of the field of accelerator science and technology. On behalf of HEPAP and the other OER advisory committees, I would like to express deepest thanks to Dr. Jay Marx and the rest of the Subpanel members for their hard and dedicated work that was necessary to generate this excellent report.

Sincerely yours

A handwritten signature in black ink, appearing to read 'S. Wojcicki', with a stylized flourish at the end.

Stanley Wojcicki

HEPAP Chairman

SW/jlm

Enclosures



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Dear Stan:

On behalf of the HEPAP Composite Subpanel for the Assessment of the Status of Accelerator Physics and Technology, I am pleased to transmit our report.

This subpanel has carried out a broad assessment of the status and promise of accelerator physics and technology with respect to all five DOE Office of Energy Research (OER) programs. The subpanel drew its members from the scientific communities supported by the OER programs and included a liaison from each OER advisory committee as a full member. In meetings over a period of eight months we addressed the charge, and in doing so, sought input from all OER program offices, the accelerator physics community, representatives of those scientific communities supported by the OER programs, DOE laboratories and universities that host major accelerator facilities, and other DOE offices and federal agencies.

After extensive deliberations, the subpanel has concluded that the DOE and its predecessor agencies—primarily through their long-standing and sustained investments in accelerator science and technology development—have *de facto* held a national trust for the stewardship of accelerator science and accelerator-based technology development. This role has provided the foundation for essential capabilities needed both to fulfill the DOE mission and to address broader national interests.

We have also concluded that it is vital that the DOE and its OER programs explicitly acknowledge this national trust for accelerator science and technology, and that this trust and the resulting stewardship responsibilities should be an explicit part of the overall DOE OER mission.

The subpanel also undertook an extensive assessment of accelerator R&D in the OER programs. We conclude that the current approach for supporting short-term accelerator R&D, which is generally centered at facilities, is effective. The subpanel also endorses the present system of supporting medium-term accelerator R&D, which is generally directed at future facility capabilities, with funds from the

facility budgets. However, we believe that this approach could yield additional benefits if the BES and NP programs were to more explicitly recognize the value of such investments and evaluate the performance of their accelerator-based facilities accordingly.

The subpanel discussed at length the question of whether all OER offices should also support proposal-driven, peer-reviewed, long-term accelerator research and development, as the high energy physics program does now. As accelerators have become increasingly vital to research in NP, BES, OFE, and OHER, a similar need has emerged for such long-term accelerator R&D as an essential component of these OER programs. Accordingly, the subpanel believes that support for such R&D is necessary if these programs are to meet their scientific missions, impact national needs, fully benefit from the creativity of accelerator scientists and engineers at universities and national laboratories, and contribute to the education of the scientists and engineers who will be needed to build and operate facilities in the future. We conclude that these programs must include planning and funding for needed long-term accelerator capabilities. This conclusion was reached after consideration of input from the DOE OER program offices, from other parts of the agency, from the accelerator science community, and especially from a panel of highly regarded researchers whose collective vision spans the full range of the OER mission.

Finally, we wish to emphasize that during the deliberations of this subpanel, the essential contributions of accelerator science and technology to basic scientific research and to society as a whole were dramatically underscored. Accelerator science and technology is a vital and intellectually exciting field-one that has provided essential capabilities for the DOE OER research programs, has had an enormous impact on the nation's scientific research, and has significantly enhanced the nation's biomedical and industrial capabilities. Strong support of this field is essential to the continuing health of OER's scientific programs.

Yours sincerely,

A handwritten signature in black ink that reads "Jay Marx". The signature is written in a cursive, flowing style.

Jay Marx for the

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Status of Accelerator Physics and Technology
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